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Local Youths become Intel Science Talent Search Semi-finalists

by Robert Lebowitz
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Although they may act like normal, unprepossessing teens, several area young men and women have been recognized as the nation's future scientists.

Nathaniel Lubin and Allison Kline of Riverdale and Abba and Shoshana Leffler of Van Cortlandt Village, all students at the Bronx High School of Science, were recognized as semi-finalists in the most prestigious pre-college science competition, the Intel Science Talent Search(STS). Commonly referred to as the "junior Nobel Prize," the STS provides a forum for high school seniors to create original research projects, which are then judged by professional scientists around the world.

Since Intel took over the sponsorship of the scientific competition from the Westinghouse Foundation in 1998, it has awarded more than 2,400 finalists with millions of dollars in scholarships.

More than 100 of those who became finalists of the competition in their youth have gone on to win the world's most coveted science and math honors, including three National Medal of Science awards, 10 MacArthur Foundation Fellowships, two Fields Medals, and five Nobel Prizes.

Riverdalian Nathaniel Lubin was honored as a semi-finalist for his project entitled, "Electromagnetic Calorimeter Resolution, Particle Identification and Analysis of a Higgs Signature Using Monte Carlo Simulation for the ATLAS Detector." In layman's terms, Nathaniel tested a large particle accelerator located in Nevis Labs, which is Columbia University's high-energy laboratory, located in Westchester. Nathaniel coded programs using the computer language C++ -which he taught himself—in order to assist researchers in proving and disproving a number of theories involving the accelerator.

Nathaniel worked on the project for the last two summers and throughout his junior year. Always harboring an interest in science, Nathaniel first took the initiative to talk with local professors, who then guided him to Nevins. Once he became involved in the project, he became responsible for knowing "what everything was for"—no simple task given the extreme complexity of the processes and equipment. Nathaniel mastered the knowledge, and the work of the 17-year-old who currently plans to pursue a career in science at either Harvard, MIT, or Stanford—has been recognized as a significant contribution toward helping leading physicists develop the most cutting-edge theories on how our universe operates.

Allison Kline's award-winning work deals with the specific brain functions that correlate to various facial expressions. Allison's initial inquiries into this field of study informed her that while one particular area of the brain—the right superior temporal sulcus—was involved in processing facial characteristics into emotions, it was unclear whether this region differentiated between a variety of facial characteristics.

Allison's project used functional magnetic resonance imaging (FMRI) to study how a person's brain reacts to his or her viewing of happy or fearful faces. She concluded that area

of the brain does play a very specific role in translating such external stimuli into emotions. Interestingly, Allison chose this area of research because of her interest in theater and the arts rather than from her interest in science. Her curiosity about facial expressions led her to wonder about how the brain processes facial expressions and emotions.

With such diverse interests, Allison is presently unsure of what career path she might wish to pursue, but she is eager to explore a variety of fields when she matriculates at Harvard in the fall.

Abba and Shoshana Leffler, twin whiz kids from Van Cortlandt Village, each won their prize dealing with the inner pathways of the body.
Abba's project was titled "Accurately Modeling Nueronal Dendritic Spine Morphology," and dealt with the body's nervous system. Shoshana on the other hand dealt with the circulatory system as well as the nervous system with her project titled, "Hypothermic Circulatory Arrest Induced Apoptosis in the Pig Prefrontal Cortex and Hippocampus."

Each of the 300 semifinalists in the competition will receive a $1,000 award for his or her work. On January 26, Intel will then announce the 40 finalists. From those, the top finalist will win a $100,000 four-year scholarship to college, while the second and third place finalists will receive $75,000 and $50,000 respectively. After that, fourth-through sixth-place finalists each receive a $25,000 scholarship; seventh-through tenth-prize winners each receive a $20,000 scholarship.

However far they get in the STS, these four local youths have already achieved a great milestone not only in the scientific world but also in our community, demonstrating the potential inherent in young people to engage and contribute to the world.